

**REMARKS**

In the Official Action, the Examiner raised a single rejection of claims 1 and 2 under the second paragraph of 35 U.S.C. §112 for including the phrase "according to JISK 2220-5.7-1993 is 0.5 to 12%". The Examiner questioned as to what subject matter this recitation imparted to the claim.

By the present Amendment, a typographical revision has been made in the specification, but the claims have not been amended since applicants believe that the claims clearly and distinctly define the invention in a manner which would be understood by those of ordinary skill in the art, particularly in light of the specification, and the additional technical information provided herewith.

As explained in detail in the specification, the present invention relates to an ink follower for a water-based ink ballpoint pen. As is well known in the art, an ink follower is used to plug the ink reservoir of a ballpoint pen so that the ink does not leak from the ink reservoir when the pen is left standing upwardly or horizontally. The ink follower defined in claim 1 contains a non-volatile or slightly volatile organic solvent and a non-styrene base thermoplastic elastomer which is soluble or swollen in the organic solvent and showing viscoelasticity which is predominant in elasticity response, wherein a value of an oil separation degree test (60°C, 24 hours) according to JIS K 2220-5.7-1993 for the above ink follower is 0.2 to 15%.

The set of JIS standards is similar to ASTM standards and the specific standard set forth in the present application and claims is well known in the art. This can be understood from considering the attached excerpt from the Japanese Industrial Standard for Lubricating Grease which is designated "JIS K 2220-1993". When considering section 5.7, a test method for oil separation is described. It will be

noted from section 5.7.1, that the test involves a conical wire gauze filter that is kept at the specified temperature in the specified time. As set forth in the present application, particularly on page 20, and as recited in the claims, the specified temperature is 60°C and the specified time is 24 hours. Thus, those of ordinary skill in the art will understand that the defined standard requires the ink follower to have the degree of oil separation that is determined in accordance with the defined test method. Since those of ordinary skill in the art will have absolutely no problem in conducting this well defined test, this provision of the claims fully meets the requirement of the second paragraph of 35 U.S.C. §112.

Since all matters raised in the Official Action have been fully met by the present Amendment, applicants respectfully request reconsideration and allowance of the present application.

Should the Examiner wish to discuss any aspect of the present application, the Examiner is invited to contact the undersigned attorney at the number provided below.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

By: *Robert G. Mukai*  
Robert G. Mukai  
Registration No. 28531

P.O. Box 1404  
Alexandria, VA 22313-1404  
703 836 6620

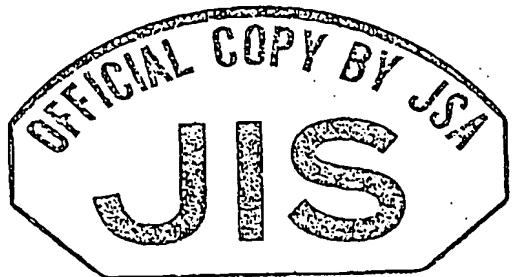
Date: October 13, 2006

# JIS

## JAPANESE INDUSTRIAL STANDARD

### Lubricating grease

© JIS K 2220-1993



This copy is an English version of Japanese Industrial Standard prepared by Japanese Standards Association, the copyright holder. Any further reproduction without permission is prohibited.

Translated and Published

by

Japanese Standards Association

# Best Available Copy

Best Available Copy

43

K 2220-1993

## 5.7 Test method for oil separation

5.7.1 Summary of test method Calculate the oil separation percentage from the mass of oil having separated from the sample in the conical wire gauze filter kept at the specified temperature in the specified time.

5.7.2 Apparatus and device The apparatus and device shall be composed of the following items (1) to (5).

- (1) Conical wire gauze filter (hereafter referred to as "filter") The filter shall be of the shape and dimensions as shown in Figs 16 and 17, and the conical part shall be made of nickel wire gauze of 250  $\mu\text{m}$  in nominal size specified in JIS Z 8801. Nickel wire of about 0.8 mm diameter shall be brazed to the circumference of the upper rim, and a hanger of nickel wire of the same diameter shall be attached to it.

Fig. 16. Conical wire gauze filter

Unit: mm

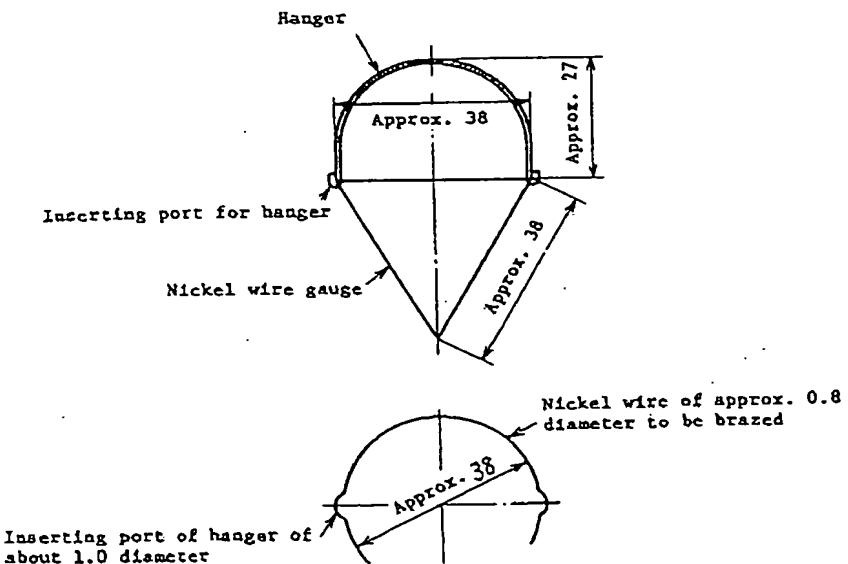
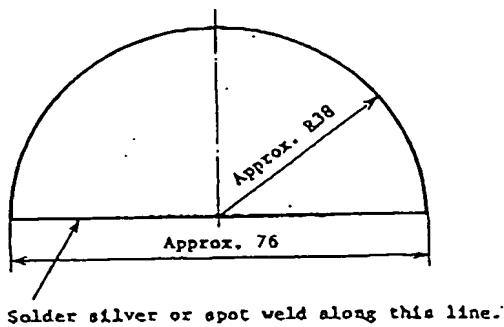


Fig. 17. Development drawing of conical wire gauze

Unit: mm



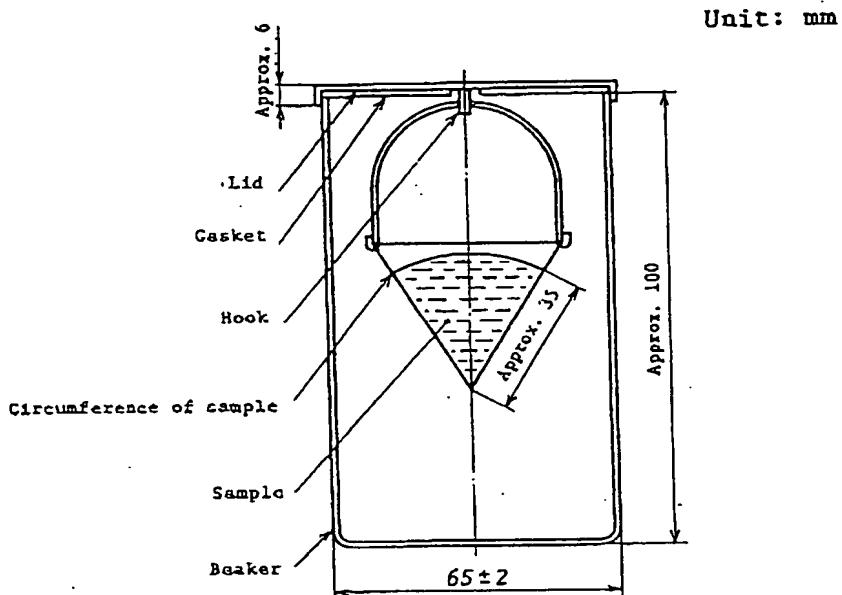
# Best Available Copy

44

K 2220-1993

- (2) Beaker The beaker as specified in Fig. 177 of JIS K 2839.
- (3) Lid A copper or brass made plate, about 1 mm thick, of the shape shown in Fig. 18. A copper or brass made hook of about 1.5 mm diameter shall be brazed near the centre of the inside surface.

Fig. 18. Assembly of oil separation tester (An example)



- (4) Gasket The gasket shall have the same diameter as inner diameter of the lid, and shall be made of synthetic rubber of about 1.5 mm thickness with a hole of about 20 mm punched at its centre.
- (5) Thermostatic air bath An electric heating type capable of keeping the specified temperature  $\pm 0.5^{\circ}\text{C}$ .

### 5.7.3 Test procedures The procedures shall be as follows:

- (1) Depress the sample uniformly to the inside of the wire gauze with a spatula from the top end of the clean filter of known mass to the position of about 35 mm length so as to allow the sample to be extruded out of the wire gauze, then stuff the sample slowly with care not to allow air bubbles to enter. Then raise up the sample surface so as not to accumulate separated oil on the surface, and smoothen it with a spatula. Remove the sample extruded from the net of the filter by finger, and after adjusting the whole mass of the sample to be about 10 g, measure the mass to the nearest 0.01 g.
- (2) Suspend the filter containing the sample with the hook of the lid, put in a clean beaker of known mass, and place in the thermostatic air bath kept at the specified temperature  $\pm 0.5^{\circ}\text{C}$  for the specified hours. Then take out the beaker from the thermostatic air bath, leave it still in a desiccator to cool down to room temperature. By hitting the end of the filter slightly on the inside edge of the beaker, transfer the oil adhering on the tip of the cone to the beaker. Measure the mass of the separated oil to the nearest 0.01 g.

# Best Available Copy

45  
K 2220-1993

5.7.4 Calculation and result Calculate the oil separation percentage according to the following formula, round off the average of two measured results for the same sample obtained according to 5.7.3, to one place of decimal in accordance with JIS Z 8401 and take it as the test result.

$$A = \frac{C}{B} \times 100$$

where, A : oil separation percentage (mass %)

B : mass of sample (g)

C : mass of separated oil (g)

## 5.8 Test method for oxidation stability

5.8.1 Summary of test method Heat the sample at 99°C in a bomb under oxygen pressure of 0.76 MPa {7.7 kgf/cm<sup>2</sup>}, record the drop of oxygen pressure at every interval of definite time, and measure the oxygen pressure decrease at 100 h elapse.

5.8.2 Oxidation stability tester The oxidation stability tester shall be composed of the following items (1) to (8). An example of the oxygen stability tester is given in Fig. 19.